BETA Group, Inc. was established in 1982 and has grown into a significant regional consulting firm with a staff of nearly 100 professional and technical support staff. BETA'S composition as a local, employee-owned firm is a key factor in the successful delivery of projects and services to our clients. Given the structure and nature of the firm, our staff are invested and empowered to perform well. This culture supports repeat engagements with clients, as demonstrated by the fact that the vast majority of our practice is repeat engagements. Our goal is to have and maintain long-term relationships with our clients.

BETA offers a broad range of infrastructure planning and design services. These include roadway/civil engineering, structures/bridge engineering, traffic engineering, landscape architecture, water/wastewater engineering; hydrology and hydraulics; stormwater management, including best management practices and LEED; GIS and mapping; pavement management; contaminated materials investigation, handling and mitigation and; environmental permitting.

Transportation is a core practice area of BETA. Our transportation experience includes the planning, engineering, and design of all functional classifications of roadways and intersections, construction has ranged from overlay to reclamation to full-depth methods. BETA has used various traffic management strategies to meet time constraints and maintain access for abutters. Many of these projects have involved utility construction, including sanitary and stormwater installation. BETA is also experienced in developing public outreach programs to present traffic management strategies and receive input from residents and businesses to ensure that the needs of the entire community are addressed. **In Downtown areas, BETA has developed staging and traffic management plans that minimize delays for pedestrians, motorists, commuter rail and transit operations, while optimizing construction activities.**

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Kien Y. Ho, P.E., PTOE
Senior Associate

Experience: Total: 27 Years / With BETA: 10 Years

Education: M.S.C.E. Transportation Engineering, Northeastern University (1994)
B.S.C.E. Cleveland State University (1984)

Registrations: Professional Engineer: RI # 7177, CT # 20486, MA #46431
Professional Traffic Operations Engineer

Professional Overview

Mr. Ho has 27 years of experience specializing in all aspects of highway and traffic design and engineering including performing highway conceptual and traffic studies for urban and residential areas close to major metropolitan roadway systems. He performs preliminary and final designs for highway projects, constructability review, construction staging / sequencing, traffic management plans, traffic signal plans, specifications and analyses, and installation of Intelligent Transportation Systems. He also has experience in complex highway design-build type of project. He has extensive experience in complex urban arterial / highway interchange projects and in traffic analysis software tools and has authored and published technical papers related to traffic analysis techniques.

As a Senior Associate at BETA, Mr. Ho provides management, project supervision and technical guidance on a variety of transportation facility improvement projects and large-scale civil engineering projects.

On-Call Traffic Engineering Services – Wellesley, MA

- Performed an upgrade evaluation on the existing closed loop system from MARC to MARC NX system. The MARC NX system will provide quick traffic response system via adaptive split phase or adaptive Max time. The system can also function under real time traffic response system based on traffic demand at individual intersection approach and adjust the approach green time accordingly.
- Responsible for providing technical support to the engineers performing all the traffic and transportation assignments such as traffic studies, parking studies, safety improvements, pedestrian signal design, traffic signal design, traffic calming design and studies, signing and pavement marking design and peer review.
- Assist and represent the Town of Wellesley at meetings by providing technical support.
- Assist the Town in evaluating the existing transportation system infrastructure along the Washington Street corridor and applying Transportation System Management (TSM) strategies as a means of improving congestion and/or safety problems on the roadway system without resorting to major reconstruction of the existing roadway infrastructure. The application of Intelligent Transportation Systems (ITS) to help manage traffic congestion was also introduced to the town for consideration in the Washington Street corridor study. TSM techniques and the latest ITS application of advanced and emerging technologies such as traffic responsive type of software coupled with Ethernet communication, and video detection system were designed and implemented for the Town to help improve roadway congestion by maximizing the efficiency of the existing roadway network system.

Massachusetts Statewide Traffic Engineering Advisory On-Call Services – MassDOT

- As Project Manager, responsible for managing work orders assigned by the MassDOT Department including those associated with highway signage and signalized intersection improvements.
- Responsibility also included developing scopes of work, contract negotiations, invoicing, design contract documents, data collection, and report and traffic analysis for the design of roadway and intersection improvements at several sites in Massachusetts.

- Researched accident records to determine patterns and locations where rates were significantly higher than state and regional averages.
- Attended public meetings and presented design issues to various communities.
- Authored reports in support of the recommended design scheme and developed Dynamic Message Signs (DMS) for the I-93 zipper lane area (specific sites included: Winchester – Four intersection improvements, I-93 HOV zipper lane, and Route 140 signage update).
- Route 24 Signing – Upgrade approximately 20 miles of existing signing on Route 24 including sign panel design and review of sign support shop drawing tasks.

Lexington Engineering Services – Lexington, MA

- Assist the Town in evaluating the existing transportation system infrastructure along Grove Street and Robinson Road.
- Assist and represent the Town at public hearings by providing technical support realted to the Esatbrook Elementary School Project.
- Provided technical support to the Town by performing all the traffic and transportation assignments such as traffic studies, safety improvements,
- Provides design and construction services for the Spring Street Improvements project.

North Attleboro Engineering Services – North Attleboro, MA

- Assist the Town in evaluating the existing transportation system infrastructure at the intersection of Washington Street/Park Street/Elmwood/Route 1.
- Assist and represent the Town at hearings by providing technical support to the Public Works Department.
- Provided technical services on various transportation assignments.

Natick Traffic Engineering Services – Natick, MA

- Assist the Town in evaluating the existing transportation system infrastructure along Route 27, Route 135 and Speen Street Corridor.
- Assist and represent the Town at public hearings by providing technical support.
- Provided technical support to the Town by performing all the traffic and transportation assignments such as traffic studies, safety improvements, streetscape design on brick pavers with traffic calming applications, parking evaluations/studies proposed by developer, traffic circulation at shopping center/malls, signage analysis and design, pedestrian signal design, traffic signal design, and provide peer review on traffic study prepared by developers.
- Provide construction services for the Route 135 Improvements project.

Brookline On-Call Engineering Services – Brookline, MA

- As Project Manager, responsible for managing all the assignments and represented the town at Public Hearings and make presentation to the public and the various Town Boards.
- Assist the Town in evaluating the existing town wide traffic calming devices.
- Involved in very controversial assignments related to parking demand and needs as a result of the Town new parking by-law requirements.
- Provided technical support to the various Boards and attend last minute public hearings, emergency traffic signal operational issues, performed traffic and transportation assignments such as traffic studies, safety improvements, streetscape design on brick pavers with traffic calming applications, parking evaluations/studies proposed by developer, signage analysis and design, pedestrian signal design and traffic signal design.
- Provide construction services for traffic signal improvements project.

Westwood On-Call Engineering Services – Westwood, MA

- As Project Manager, responsible for managing all the assignments and represented the town at Public Hearings and make presentation to the public and the various Town Boards.
- Assist the Town in evaluating traffic calming devices application.

- Provided technical support to the Department of Public Works and performed traffic and transportation assignments such as traffic studies, safety improvements, signage analysis and design, pedestrian signal design and traffic signal design.
- Provide construction services for roadway improvements project.

On-Call City Traffic Engineer – Stamford, CT

- Served as City Traffic Engineer with responsibilities involving addressing and developing solutions for traffic related problems, solicited public participation process, quick response to letters from concerned citizens requesting traffic-engineering resolutions, conducting surveys related to street system conversion from two-way to one-way street, preparing traffic reports, supervising technical personnel collecting traffic data, and making presentations to the respective city traffic commissions and the Mayor's Office.
- Provided traffic engineering advice and assistance in the review of traffic signal plans, traffic signal inspections, and assisted in technical and administrative review of on-going and proposed traffic engineering projects throughout the City.
- Worked and coordinated transportation planning projects with the City's transportation planner.

Various Highway Interchange Projects - MassPort Authority

- As Principal Traffic Engineer, was concurrently involved in several complex Massport highway interchange projects including:
  - LAMP – Terminal Area Roadways redesign including several terminal studies and the Airside Connector Tunnel
  - D008A Interstate highway Preliminary Design
  - CA/T Coordination and Constructibility Review of Major Highway Interchange Project
  - Route 1A Connectors and Sumner Callahan highway connection Studies

Route 1A Connectors Interchange (Section D008A of the CA/THT), MassPort Authority – East Boston, MA

- Served as Principal Engineer providing Highway and traffic support for the development of preliminary designs that provided for the construction of a major highway interchange in a restricted site while maintaining existing traffic flows on the main approach to Logan Airport.
- Designed new guide signs included under this contract.
- Major considerations were given to impacts on MassPort operations

Old Colony Railroad Rehabilitation – Greenbush line, Middleborough & Plymouth Lines, Massachusetts Bay Transportation Authority (MBTA)

- Served as Lead Traffic Engineer for the design of traffic signals, pavement markings, and signing at various intersections along the Middleborough and Plymouth line.
- Prepared contract documents for traffic signal design and traffic management plans for construction activities related to new railroad bridges over waterways and highways, and the replacement and rehabilitation of 44 existing railroad bridges.
- Designed more than 50 railroad grade crossing intersections, which involved the analysis and mitigations of all the impacted intersections and roadway system along the Greenbush line.
- Attended extensively public meetings to help resolve any design issues with the community and worked closely with all the towns impacted by the railroad rehabilitation project.

Cross Harbor and Regional Transportation (CHART) Review of East Boston/Logan Airport Interchange, MassDOT and MassPort Authority – Boston, MA

- As Senior Project Traffic Engineer, responsible for assessing pre- and post-Ted Williams Tunnel traffic conditions around Logan Airport and South Boston.
- Provided recommendations for new airport access and internal circulation, as well as parking alternatives.
- Utilized transportation modeling, developed as part of the overall Ted Williams Tunnel project, in the assessment of existing and future traffic conditions in this complex highway environment.

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Craigville Beach Road – Barnstable, MA
- Served as Traffic Engineer for assignments involving roadway and intersection improvements.
- Prepared quantity/cost estimates, grading, profile, and cross-section plans.

Commonwealth Avenue – Boston, MA
- Served as Traffic Engineer for project involving roadway design, data collection and verification.
- Also, prepared soil boring, utilities grading and profile plans.

Investors Management Group Traffic Impact Study – Peabody, MA
- Traffic Engineer for the preparation of traffic impact reports for a proposed convenience store, the White Hen Pantry, to be located in Beverly, Massachusetts.
- Report preparations involved performing traffic counts and traffic analyses.

Traffic Operations Study, MassDOT – Revere, MA
- Performed a comprehensive traffic operations study of 10 intersections located on the American Legion Highway system; designed improvements to upgrade operating conditions at these locations.

Route 3, MassDOT– Weymouth & Duxbury, MA
- Served as Traffic Engineer responsible for roadway design and quantity/cost estimates for 11 miles of state highway.
- Developed grading, profile, and cross-section plans.
- Analyzed traffic conditions at major ramp interchanges for a proposed widening (from four to six lanes) of an existing freeway.

Additional Training:
ITS Standard Overview, 2003

DMS ITS Standard, 2003
Traffic Signal Coordination Workshops, 2002

Certification
Certified IMSA (International Municipal Signal Association) Traffic Signal Inspector
Certified # SI-71973

Technical
"Analysis Techniques of Weaving Section Under Non-Freeway Conditions"

Paper
Published and Presented at the 1998 National Annual ITE Meeting
"An Evaluation of Signalized Intersection System Analysis Techniques"
Published and Presented at the 2000 National Annual ITE Meeting

Awards
Anthony W. Sykes Award for Best Technical Paper, "An Evaluation of Signalized Intersection System Analysis Techniques"

Societies
ITS MA Chapter – Past President
ITE MA Chapter - Director
ITE New England Chapter – President, Chronicle Newsletter Editor, Technical Committee, Senior Director, Program Chair, Chair Student Chapter Liaison
ITE National – Member
Boston Society Of Civil Engineers – Member
Women's Transportation Seminar Boston – Member, Mentoring Committee

BETA

Jason DeGray, P.E., PTOE
Senior Project Engineer

Experience: Total: 9 Years / With BETA: 6 Years

Education: M.S., Transportation Engineering, University of Massachusetts-Amherst
B.S., Mechanical Engineering, Boston University

Registrations: Professional Engineer: MA #46632
Professional Traffic Operations Engineer

Professional Overview

Mr. DeGray has over nine years of experience in the transportation planning and engineering fields. As a Senior Project Engineer, he has conducted numerous traffic impact and access studies for a variety of municipal and private clients, both in a leadership role and as a member of an integrated team. In addition to traffic impact studies Jason routinely undertakes Corridor Studies, Traffic Calming Studies, Transportation Master Plans, Road Safety Audits and Parking Studies. Mr. DeGray often utilizes this experience to peer review other consultants' work. He is well versed with the permitting process for land development projects and is practiced as a technical writer as well as with public hearing participation. Mr. DeGray is well versed in the procedures and methodology contained in the latest versions of the Highway Capacity Manual, MUTCD and AASHTO Green Book amongst other industry standards as well as with the latest iterations of the leading software platforms for conducting traffic analyses including Synchro/Simtraffic, Sydra, HCS+ and Vissim. Jason also assists with budget oversight, proposal/scope preparation and task delegation.

Traffic Impact and Access Studies

Commons at Prospect Hill - Waltham, MA

- Assisted with the development of proposed Commons at Prospect Hill Development Project at the former Polaroid Site in Waltham, Ma. The project consisted of 1.7 million square feet of mixed use retail, restaurant and office space.
- Responsibilities included conducting traffic impact analyses, shared parking analysis, mitigation recommendations, integration of multi-use paths and commuter services, site plan development and report and permit application preparation.
- Analysis effort included a comprehensive freeway evaluation and complex Vissim simulations.

Plymouth Rubber Redevelopment - Canton, MA

- Conducted a comprehensive TI&AS for more the proposed re-use of the former Plymouth Rubber industrial site. The proposed mixed-use redevelopment project involved the construction of 650 residential units with 20,000 sf of accompanying retail space.

Stone Ridge Office Development - Milford, MA

- Prepared a TI&AS for a proposed 625,000 sf office development. This project was proposed as of then undeveloped land directly abutting Interstate 495.
- Project mitigation included modifications to the ramp terminals and the recommendation of an interconnected signal system as well as additional lanes on Route 85 in the vicinity of the interchange.

Locust Street School - Middleton, MA

- Completed a study of the traffic impacts and transportation issues associated with the creation of a new elementary school with a student population approaching 700 students at full occupancy.
- Proposed mitigation to support the development of the school which would occur on previously undeveloped land.

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Corridor/Transportation Assessment Studies

- Route 16 corridor study for the Towns of Uxbridge, Douglas & Webster, MA. A comprehensive look at the corridor including identifying problem locations, analysis and mitigation.
- Birch Street corridor study for Camp Lejeune, NC. This study focused on the needs of a vital corridor within a rapidly expanding and evolving section of one of the largest military bases in the world. The study assessed future needs and made design recommendations to accommodate future planned development.
- Route 28 corridor study for the Town of Yarmouth, MA. Completed a complex Vissim simulation for a congested stretch of this roadway for which a two-way center left turn lane was being contemplated.
- Assessed existing traffic and access conditions of the North Shore Medical Center/Salem Hospital campus as the behest of Hospital administration. Identified access, parking and capacity deficiencies to be addressed.
- Actively assisting the Town of North Attleborough with the development of design alternatives to the complicated intersection of Routes 1 and 1A.

Functional Design Reports

- Conducted a FDR for the creation of a roundabout at the intersection of Colrain Street at Colrain Road/College Drive in Greenfield, MA.
- Prepared a FDR to support the creation of an interconnected signal system at three locations along Washington Street in Taunton, MA in conjunction with the replacement of the Mill River Bridge as part of the Accelerated Bridge Program.

Parking Studies

- Evaluated the on and off-street public parking facilities in the Town of Wellesley including an in-depth focus on off-street lots. Recommendations included areas to focus on enhancing parking supply as well as the development of a fee structure to promote individual lots for either commercial of commuter purposes.
- Assisted the City of Lynn with a comprehensive assessment of the status of both on and off-street parking in the City's downtown. Tasks including assessing utilization, management policies and fee structure. Recommendations included alterations to parking restrictions, development of a permit policy and an assessment of applicable management technologies.

Road Safety Audits

- Conducted Road Safety Audits and report preparation as a team member in Attleboro and Agawam, MA

Traffic Calming Projects

- For the Town of Westwood, led the effort to develop a traffic calming program to mitigate a significant residential cut-through. Prepared recommendations as well as leading the public coordination effort.

On-Call/Peer Reviews Services – Various Communities in Massachusetts

- Provide on-call/peer review services to various municipalities including Westwood, Westford, Wellesley, Natick, Framingham, Middleton, Auburn, Braintree, Littleton and Fitchburg MA.

Software Expertise

SYNCHRO, Vissim, AutoCAD 2012, ArcMAP 9.1, SIDRA, Highway Capacity Software, MS Office

Societies

- Institute of Transportation Engineers - *Chair of the New England ITE Emerging Professionals Group*
- American Planners Association

Downtown Framingham Traffic Study

Framingham, MA

Project Reference:
Mr. Peter Sellers
Director of Public Works
150 Concord Street
Room 213
Framingham, MA 01702
(508) 962-4842

Project Schedule:
Design - Ongoing

Key Personnel:
Ken Petraglia, P.E., PTOE
Tony Lionetta, P.E.
Mike Wasielewski, P.E., PTOE

Study/Design:
$360,000

BETA is leading a multi-disciplinary team in the development of a long-term plan to revitalize Downtown Framingham.

Downtown Framingham is a hub of multi-modal transportation, with vehicles, trucking, Massachusetts Bay Transportation Authority (MBTA) commuter rail, Amtrak passenger rail, Local Inter Framingham Transit (LIFT) buses, pedestrians/bicycles, and CSX freight operations converging in the core Downtown area. This area is typified by a general high level of congestion and delay.

Numerous at-grade rail crossings of the most heavily utilized vehicular corridors result in obvious conflicts, and exacerbate vehicular delays. These rail crossings are heavily utilized by both freight (CSX) and passenger (MBTA & Amtrak) trains. While transportation in Downtown Framingham, and associated delays, are multi-modal, each also maintains some degree of independence. Accordingly, a detailed evaluation of Downtown Framingham will look beyond the grade crossing issue in order to comprehensively improve traffic operations in the area. The focus of this study will be development of long term transportation strategies to optimize Downtown traffic flow.

Existing urban design and land use conditions will also be assessed, both to describe the existing character of the Downtown, but also to serve as a base for potential alternatives to create an identity within Framingham.

The third component of this study is a market and economic assessment of the Downtown area to develop strategies that will create strategies to optimize the balance of various business activity, complementary commercial activity, and related residential development.

The three components of transportation, urban design/land use and economics will then begin an iterative process in which alternatives developed for each discipline will be matched to form Scenarios that represent overall strategies for the revitalization of Framingham.

Natick Mall Expansion, Peer Review Services

Natick, MA

Reference:
Mr. Patrick Reffett
Director of Community Development
13 East Central Street
Natick, MA 01760
(508) 647-6145

Status:
2003- Present

Contract Value:
$170,000

Key Personnel:
Kien Ho, P.E., PTOE
Darshan Jhaveri, P.E.

Under an On-Call engineering services contract with the Town, BETA conducted extensive and comprehensive Peer Reviews of traffic and roadway impacts and mitigations related to the multi-year Natick Mall Expansion Project. The Natick Mall consists of 1,159,000 square feet of retail space. In addition to expanded parking and access, the Expansion project added 565,000 square feet of additional retail space and a 250-unit condominium development. Expansion involves two parcels of land. The North parcel measures 16.87 acres and the South parcel measures 41 acres. Both parcels are located completely within the Town of Natick, near the Framingham Town line.

The review effort involved many aspects and elements, including the review of traffic management, full-build signage, Parking Deck F, Deck C Ramp, Route 9 Streetscape, related Design Reviews of proposed work along Speen Street, as well as of proposed traffic related site work within the confines of the mall property.

BETA was instrumental in negotiating mitigations on the Town's behalf to improve traffic conditions and pedestrian safety. In addition to providing traffic peer review services and review assistance during construction phases, BETA worked with the Developer to design improved pedestrian paths and facilities, improved parking layout /circulation, enhanced overall signage and internal circulation, and traffic calming within the Mall property including the introduction of two modern roundabouts.

Linden Square Redevelopment, Peer Review

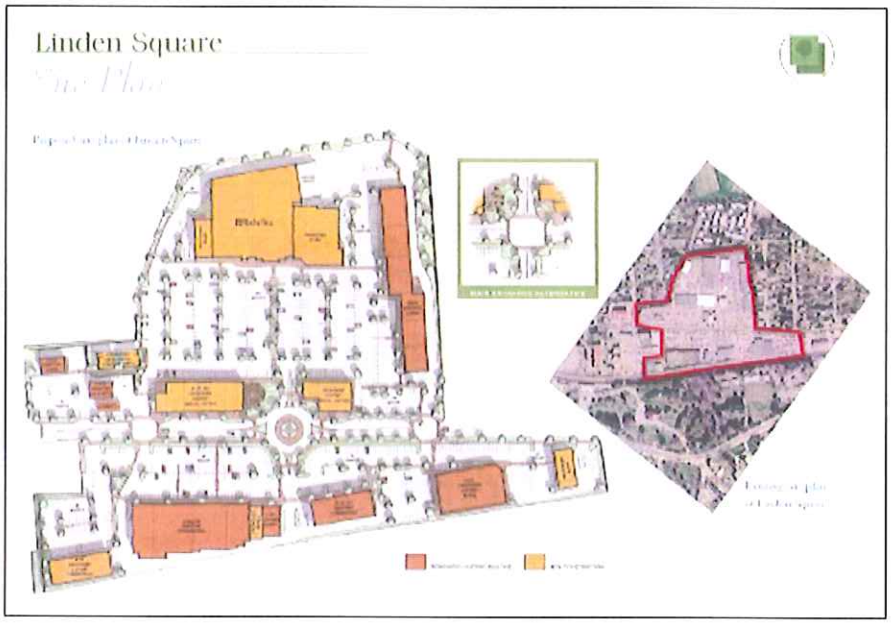
Wellesley, MA

Reference:
Mr. Hans Larsen
Assistant Director of General Government
Washington Street
Wellesley, MA 02482
(781) 431-1019

Status:
2005-2008
2009 Follow-up Traffic Monitoring

Contract Value:
$200,000

Key Personnel:
Frank Romeo, P.E.
Kien Ho, P.E., PTOE
Jaklyn Centracchio



Under an On-Call Traffic Engineering services contract with the Town of Wellesley, BETA Group had a key role in the Linden Square Redevelopment project. This Development involves redeveloping 24-acres, consisting of 12 parcels on either side of Linden Street located in the heart of Wellesley. The mixed-use redevelopment includes both new construction and renovated space for mixed uses including commercial, office and other retail uses, as well as additional residential rental units. BETA's services included the following:

- Assistance in developing the scope and study area for the Proponent's Impact Study.
- Performance of a comprehensive traffic review that included parking, traffic signal design, traffic calming and pedestrian safety.
- Assistance to the Town in developing the proposed zoning amendment for the Linden Street corridor overland district.
- Formation of the Town's Development Review Team (TDRT). The TDRT created a detailed Development Agreement between the Proponent and the Town, which addressed mitigation improvements and related costs. The agreement also outlined the development's limitations associated with the potential increase in traffic volume as well as its impacts to the development site, adjacent businesses and the area's residential roadway system.
- Representation of the Town at public hearings for the Planning Board, Board of Selectmen, Zoning Board of Appeal and Special Town meetings.
- Identification of submissions required for adherence to the requirements of the Zoning Bylaw, Project of Significant Impact (PSI), industrial standards for filing permits and traffic analysis methodology.